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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/597,076

07/11/2006

Stephen Lee

Becker-1016 US

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EXAMINER

NGUYEN, COLETTE B

ART UNIT

PAPER NUMBER

1793

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,076	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> COLETTE NGUYEN	<b>Art Unit</b> 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 6/21/07.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/02/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. In claim 6, the applicant cites “conically” designed with its smaller part at its lower end. The drawing shows a cylindrical design instead. Therefore, the conical design of the lower part of the bore hole must be shown or the feature(s) or canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, 3, 5,7,8,18,19** are rejected under 35 U.S.C. 102(b) as being encompassed by Hanse et al. (US 6, 367,671). Hanse discloses a design of a stopper rod for regulating the flow of a molten metal from a distributor or a casting ladle. The elongated body of refractory material has a borehole positioned coaxially with respect to the body of the stopper rod and adapted to fixedly receive a metal rod for its attachment to a lifting mechanism. The axial borehole of the body of refractory material has an enlarged part with an annular sealing surface spaced away from the upper end of the body of refractory material. The design of the stopper device of the instant claim is anticipated by the teaching of Hanse.(See figures 1,2 and col.1,a and b)
3. **Regarding claim 1.** Hanse discloses a design of an elongated stopper device for flow-control of molten metal from a vessel, containing molten metal, comprising:
  - a) A body made of a refractory ceramic material, ((col1, and ln20).
  - b) A bore hole having a longitudinal axis and extending from an upper surface of said body downwardly, (Col1, ln22).
  - c) said bore hole being equipped along its length with at least one anchor of a different material, fixed within said body between the upper surface of said body (Col4,ln 27,"the

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*sleeve 14 is fitted on the rod 6 and maintains the gaskets”), and a lower end of said bore hole and projecting radially into said bore hole with its main surfaces running predominantly perpendicular to the longitudinal axis of the bore hole,*

d) said anchor being adapted to receive and fix one threaded end of a metal rod, inserted into said bore hole.(col4,ln1-10) . Hanse’s design encompasses the instant claim.

4. Regarding claim 2. Hanse’s stopper has a partially threaded sectional its inserted end (see fig 1).

5. Regarding claim 3. Hanse discloses a stopper device according to claim 1, including a sealing member being arranged adjacent to said anchor.(col4, ln23 “*the metal rod 6 has a collar 12 with annular sealing surface facing the annular sealing surface 10 of the borehole of the body of refractory material so as to create a seal against gases*”).

6. Regarding claim 5. Hanse teaches a sealing member with a cylindrical shape (Col4, ln23,” *The metal rod 6 has a collar 12 with annular sealing surface...*”) the collar has a cylindrical shape.

7. Regarding claim7. Hanse discloses a stopper device wherein said rod has a smaller width at its part which first enters said sealing member than at its part on top. (Fig 1)

8. Regarding claim 8. Hanse discloses the seals are graphite (Col.4, ln.13).

9. Regarding claim 18. Hanse discloses the anchor is made of metal (Col4, ln43-55)

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10. Regarding claim 19. Hanse discloses an axial bore in the rod. (fig.1) and Col 4, ln2, “The metal rod 6 also has an axial borehole 7 that passes through it ..”)

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 4, 6, 9-17 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanse et al ((671) as applied to claim1 above, and further in view of Hammond et al (GB1,032,291).

Both disclose design of an elongated stopper device made of refractory material used for flow-control of molten metal from a vessel. However, Hanse does not discuss the anchor features and options of the bore beside the good sealing feature to prevent gas leakage. Hammond, on the other hand, disclose details of the graphite seal and a

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design that creates a minimum contact of the metal rod with the surface of the bore by providing longitudinally ribbed designed with bush rings or other projections in the sleeve bores, such as bosses or interrupted rings at intervals along the sleeve bore.

Theses “spacers” reduce transmission of heat to the metal rod, and provide support and anchor of the rod inside the borehole.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Hammond of ribs or interrupted rings at intervals along the sleeve bore with the teaching of Hanse of the one -piece stopper rod with gas tightness to provide a stopper that is easy to make, easy to assemble with improvement of sealing and avoid differential stresses between the ceramic body and the metal rod.

(Hammond, Fig1-9)

7. Regarding claim 6. Both Hanse and Hammond do not disclose a stopper device wherein the part of the bore hole receiving the sealing member is conically designed with its smaller part at its lower end. However, as the inserted end is already cylindrically smaller in diameter than the upper part, it would have been obvious for one of ordinary skill in the art at the time of the invention to change it to conical design to ease the insertion and provide more void space between the bore and the rod.

8. Regarding claims 9-11 and 20. Hanse teaches a stopper device according to claim 1, and further in view of Hammond wherein the anchor has a sheet like shape designed as a ring arranged at a distance to each other. (Hammond, page 2, ln 55-80). As imaginary helical pattern is not disclosed by Hammond, it would have been obvious for one of ordinary skill in the art to space as such to provide a better longitudinal

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contact of the rod for a secured anchor. And for claiming an angle of between 1-5°, it would have been obvious for one of ordinary skill in the art to optimize the angle for a helical pattern.

9. Regarding claim 12-17. Hanse in view of Hammond disclose "bosses or interrupted rings at intervals along the sleeves bore". It would have been obvious for one of ordinary skill in the art at the time of the invention to use a snap ring which is also a type of ring as a bush ring. (page2, ln 73-78). However, it is an "interrupted" ring therefore less surface contact and less heat transfer as taught by Hammond .

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is (571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Mc Neil can be reached on (571)-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLETTE NGUYEN/  
Examiner, Art Unit 4162

CN  
October 14, 2008

/Melvin C. Mayes/  
Supervisory Patent Examiner, Art Unit 1793